WHAT IS CLAIMED IS:

1. A method for restoring a virtual path in an optical network, the method comprising:

broadcasting a plurality of resource request packets to a plurality of nodes in said optical network;

identifying a plurality of nodes with resources wherein said nodes with resources are ones of said nodes having a resource necessary to support said virtual path;

determining an alternate physical path, said alternate physical path comprising ones of said nodes with resources;

configuring said alternate physical path by establishing a communication connection between said ones of said nodes with resources; and

restoring said virtual path by provisioning said virtual path over said alternate physical path.

2. The method of claim 1, further comprising:

detecting a failure in said virtual path;

3. The method of claim 2, wherein:

said detection of said failure is done by receiving a failure message packet;

said identification of said nodes with resources is done by acknowledging said failure message packet; and

said determination of said nodes with resources is done by analyzing a response to said resource request packets.

4. The method of claim 2, wherein:
said virtual path is provisioned on a physical path between a first and a second node of said optical network;
said optical network comprises said nodes; and
each one of said nodes is coupled to at least one another of said nodes by a plurality of optical links.

5. The method of claim 4, wherein:
said physical path between said first and said second node comprises a plurality of intermediate nodes.

6. The method of claim 4, wherein each one of said nodes is coupled to at least one another of said nodes in a mesh topology.

7. The method of claim 6, wherein said restoring of said virtual path is completed in less than 2 seconds.

8. The method of claim 6, wherein said restoring of said virtual path is completed in less than 250 milliseconds.

9. The method of claim 6, wherein said restoring of said virtual path is completed in less than 50 milliseconds.

10. The method of claim 6, wherein said restoring of said virtual path by is performed by said first node.

11. The method of claim 10, further comprising:
if said failure is a local physical port failure between said first node and an adjacent node,
determining an available different physical port of said link between said first node and said adjacent nodes,

initiating a physical port switch request for said adjacent node,

provisioning said virtual path to said different physical port, and

updating said provisioning information in a node database.

12. The method of claim 11, further comprising:

if different physical port of said link between said first node and said adjacent nodes is unavailable,

(i) changing a state of said virtual path to restoring,

(ii) identifying a plurality of adjacent nodes with required bandwidth for said virtual path,

(iii) forwarding a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and

(iv) waiting for a response for said path restoration request for a first predetermined time interval.

13. The method of claim 12, further comprising:

if said response to said path restoration request is not received within said first predetermined time interval,

repeating steps (ii) – (iv) for a second predetermined time interval.

14. The method of claim 13, further comprising:

if said response is not receive in within said second predetermined time interval,

generating network alarms.

15. The method of claim 14, wherein said first and said second predetermined time intervals are defined during provisioning of said virtual path.

16. The method of claim 14, wherein said first and said second predetermined time intervals are dynamically calculated by said network based on network traffic condition.

17. The method of claim 10, further comprising:

if said failure did not occur at a physical port of said link between said first node and one of adjacent nodes of said first node,

(i) changing a state of said virtual path to restoring,

(ii) identifying a plurality of adjacent nodes with required bandwidth for said virtual path,

(iii) forwarding a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and

(iv) waiting for a response for said path restoration request for a first predetermined time interval.

18. The method of claim 17, further comprising:

if said response for said path restoration request is not receive within said first predetermined time interval,

repeating steps (ii) – (iv) for a second predetermined time interval.

19. The method of claim 18, further comprising:

if said response for said path restoration request is not received with in said second predetermined time interval,

generating network alarms.

20. The method of claim 19, wherein said first and said second predetermined time intervals are defined during provisioning of said virtual path.

21. The method of claim 19, wherein said first and said second predetermined time intervals are dynamically calculated by said network based on network traffic condition.

22. The method of claim 6, wherein said restoring of said virtual path is performed by one of said intermediate nodes.

23. The method of claim 22, wherein said failure is a local physical port failure between said intermediary node and an adjacent node comprising said virtual path.

24. The method of claim 23, further comprising:

determining an available different physical port of said link between said intermediary node and said adjacent nodes;

initiating a physical port switch request for said adjacent node;

provisioning said virtual path to said different physical port; and

updating said provisioning information in a node database.

25. The method of claim 24, further comprising:

if different physical port of said link between said intermediary node and said adjacent nodes is unavailable,

a. changing a state of said virtual path to down,

b. generating a restoration request,

c. forwarding said restoration request to a plurality of adjacent nodes comprising said virtual path, and

d. waiting for a response to said restoration request for a predetermined interval of time.

26. The method of claim 25, further comprising:
if said response to said restoration request is not received
within said predetermined interval of time,
repeating steps (b) – (d) for a predefined threshold
times.

27. The method of claim 26, further comprising:
if said response to said restoration request is not received
within said predefined threshold times,
releasing resources of said virtual path.

28. The method of claim 27, wherein said predetermined interval of time and said predefined threshold are defined during provisioning of said virtual path.

29. The method of claim 27, wherein said predetermined interval of time and said predefined threshold are dynamically calculated by said network based on network traffic condition.

30. The method of claim 26, further comprising:
if said response to said restoration request is received,
releasing resources of said virtual path.

31. The method of claim 22, further comprising:
if said intermediary node receives a message of a remote port
failure at a node comprising said virtual path,
changing a state of said virtual path to down,
forwarding said message to a plurality of adjacent nodes
comprising said virtual path, and
initiating a timer for receiving a response to said
forwarded message.

32. The method of claim 31, further comprising:
if said timer expires before said response to said forwarded message is received,
releasing resources of said virtual path.

33. The method of claim 31, further comprising:
if said response to said forwarded message is received,
releasing resources of said virtual path.

34. The method of claim 22, further comprising:
if said intermediary node receives a valid restore path request,
updating path information in a node database,
allocating resources requested for said virtual path, and
forwarding said restore path request to all eligible adjacent nodes.

35. The method of claim 22, further comprising:
if said intermediary node receives an invalid restore path request,
responding with a negative acknowledgment.

36. The method of claim 6, wherein restoring of said virtual path is performed by said second node.

37. The method of claim 36, further comprising:
if said failure is a local physical port failure between said second node and an adjacent node comprising said virtual path,
determining an available different physical port of said link between said second node and said adjacent nodes,

initiating a physical port switch request for said adjacent node,

provisioning said virtual path to said different physical port, and

updating said provisioning information in a node database.

38. The method of claim 37, further comprising:

if different physical port of said link between said second node and said adjacent nodes is unavailable,

a. changing a state of said virtual path to down,

b. generating a restoration request,

c. forwarding said restoration request to a plurality of adjacent nodes comprising said virtual path, and

d. waiting for a response to said restoration request for a predetermined interval of time.

39. The method of claim 38, further comprising:

if said response to said restoration request is not received within said predetermined interval of time,

repeating steps (b) – (d) for a predefined threshold times.

40. The method of claim 39, further comprising:

if said response to said restoration request is not received within said predefined threshold times,

releasing resources of said virtual path.

41. The method of claim 40, wherein said predetermined interval of time and said predefined threshold are defined during provisioning of said virtual path.

42. The method of claim 40, wherein said predetermined interval of time and said predefined threshold are dynamically calculated by said network based on network traffic condition.

43. The method of claim 39, further comprising:
if said response to said restoration request is received,
releasing resources of said virtual path.

44. The method of claim 36, further comprising:
if said second node receives a message of a remote port failure
at a node comprising said virtual path,
acknowledging said message,
changing a state of said virtual path to down, and
releasing resources of said virtual path.

45. The method of claim 36, further comprising:
if said second node receives a valid restore path request,
updating path information in a node database, and
allocating resources requested for said virtual path.

46. The method of claim 36, further comprising:
if said second node receives an invalid restore path request,
responding with a negative acknowledgment.

47. A computer system comprising:
a processor;
an optical network interface, coupled to said processor and to
an optical network;
computer readable medium coupled to said processor; and
computer code, encoded in said computer readable medium,
configured to cause said processor to:
broadcast a plurality of resource request packets to a
plurality of said nodes in said optical network;

identify a plurality of nodes with resources wherein said nodes with resources are ones of said nodes having a resource necessary to support said virtual path;

determine an alternate physical path, said alternate physical path comprising ones of said nodes with resources;

configure said alternate physical path by establishing a communication connection between said ones of said nodes with resources; and

restore said virtual path by provisioning said virtual path over said alternate physical path.

48. The computer system of claim 47, wherein said computer code configured to cause said processor to:

detect a failure in said virtual path.

49. The computer system of claim 47, wherein said computer code configured to cause said processor to restore said virtual path is further configured to cause said processor to:

complete restoration of said virtual path in less than 50 milliseconds.

50. The computer system of claim 47, wherein:

said virtual path is provisioned on a physical path between a first and a second node of said optical network;

said optical network comprises said nodes; and

each one of said nodes is coupled to at least one another of said nodes by a plurality of optical links.

51. The computer system of claim 50, wherein:

said physical path between said first and said second node comprises a plurality of intermediate nodes.

52. The computer system of claim 50, wherein each one of said nodes is coupled to at least one another of said nodes in a mesh topology.

53. The computer system of claim 52, wherein said computer code is configured to cause said processor to perform said restoring of said virtual path at said first node.

54. The computer system of claim 53, wherein said computer code configured to cause said processor to:

if said failure is a local physical port failure between said first node and an adjacent node,

determine an available different physical port of said link between said first node and said adjacent nodes,

initiate a physical port switch request for said adjacent node,

provision said virtual path to said different physical port, and

update said provisioning information in a node database.

55. The computer system of claim 54, wherein said computer code configured to cause said processor to:

if different physical port of said link between said first node and said adjacent nodes is unavailable,

(i) change a state of said virtual path to restoring,

(ii) identify a plurality of adjacent nodes with required bandwidth for said virtual path,

(iii)forward a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and

(iv)wait for a response for said path restoration request for a first predetermined time interval.

56. The computer system of claim 55, wherein said computer code configured to cause said processor to:

if said response to said path restoration request is not received within said first predetermined time interval,

repeat steps (ii) – (iv) for a second predetermined time interval.

57. The computer system of claim 56, wherein said computer code configured to cause said processor to:

if said response is not received within said second predetermined time interval,

generate network alarms.

58. The computer system of claim 53, wherein said computer code configured to cause said processor to:

if said failure did not occur at a physical port of said link between said first node and one of adjacent nodes of said first node,

(i) change a state of said virtual path to restoring,

(ii) identify a plurality of adjacent nodes with required bandwidth for said virtual path,

(iii)forward a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and

(iv)wait for a response for said path restoration request for a first predetermined time interval.

59. The computer system of claim 58, wherein said computer code configured to cause said processor to:

if said response for said path restoration request is not receive within said first predetermined time interval,

repeat steps (ii) – (iv) for a second predetermined time interval.

60. The computer system of claim 59, wherein said computer code configured to cause said processor to:

if said response for said path restoration request is not received with in said second predetermined time interval,

generate network alarms.

61. The computer system of claim 52, wherein said computer code configured to cause said processor to perform said restoring of said virtual path at one of said intermediate nodes.

62. The computer system of claim 61, wherein said computer code configured to cause said processor to:

if said failure is a local physical port failure between said intermediary node and an adjacent node comprising said virtual path,

determine an available different physical port of said link between said intermediary node and said adjacent nodes,

initiate a physical port switch request for said adjacent node,

provision said virtual path to said different physical port, and

update said provisioning information in a node database.

63. The computer system of claim 62, wherein said computer code configured to cause said processor to:

if different physical port of said link between said intermediary node and said adjacent nodes is unavailable,

a. change a state of said virtual path to down,

b. generate a restoration request,

c. forward said restoration request to a plurality of adjacent nodes comprising said virtual path, and

d. wait for a response to said restoration request for a predetermined interval of time.

64. The computer system of claim 63, wherein said computer code configured to cause said processor to:

if said response to said restoration request is not received within said predetermined interval of time,

repeat steps (b) – (d) for a predefined threshold times.

65. The computer system of claim 64, wherein said computer code configured to cause said processor to:

if said response to said restoration request is not received within said predefined threshold times,

release resources of said virtual path.

66. The computer system of claim 64, wherein said computer code configured to cause said processor to:

if said response to said restoration request is received,

release resources of said virtual path.

67. The computer system of claim 61, wherein said computer code configured to cause said processor to:

if said intermediary node receives a message of a remote port failure at a node comprising said virtual path,

change a state of said virtual path to down,

forward said message to a plurality of adjacent nodes comprising said virtual path, and

initiate a timer for receiving a response to said forwarded message.

68. The computer system of claim 67, wherein said computer code configured to cause said processor to:

if said timer expires before said response to said forwarded message is received,

release resources of said virtual path.

69. The computer system of claim 67, wherein said computer code configured to cause said processor to:

if said response to said forwarded message is received,

release resources of said virtual path.

70. The computer system of claim 61, wherein said computer code configured to cause said processor to:

if said intermediary node receives a valid restore path request,

update path information in a node database,

allocate resources requested for said virtual path, and

forward said restore path request to all eligible adjacent nodes.

71. The computer system of claim 61, wherein said computer code configured to cause said processor to:

if said intermediary node receives an invalid restore path request,

respond with a negative acknowledgment.

72. The computer system of claim 52, wherein said computer code configured to cause said processor to perform said restoring of said virtual path at said second node.

73. The computer system of claim 72, wherein said computer code configured to cause said processor to:

if said failure is a local physical port failure between said second node and an adjacent node comprising said virtual path,

determine an available different physical port of said link between said second node and said adjacent nodes,

initiate a physical port switch request for said adjacent node,

provision said virtual path to said different physical port, and

update said provisioning information in a node database.

74. The computer system of claim 73, wherein said computer code configured to cause said processor to:

if different physical port of said link between said second node and said adjacent nodes is unavailable,

a. change a state of said virtual path to down,

b. generate a restoration request,

c. forward said restoration request to a plurality of adjacent nodes comprising said virtual path, and

d. wait for a response to said restoration request for a predetermined interval of time.

75. The computer system of claim 72, wherein said computer code configured to cause said processor to:

if said response to said restoration request is not received within said predetermined interval of time,

repeat steps (b) – (d) for a predefined threshold times.

76. The computer system of claim 75, wherein said computer code configured to cause said processor to:

if said response to said restoration request is not received within said predefined threshold times,

release resources of said virtual path.

77. The computer system of claim 75, wherein said computer code configured to cause said processor to:

if said response to said restoration request is received,

release resources of said virtual path.

78. The computer system of claim 72, wherein said computer code configured to cause said processor to:

if said second node receives a message of a remote port failure at a node comprising said virtual path,

acknowledge said message,

change a state of said virtual path to down, and

release resources of said virtual path.

79. The computer system of claim 72, wherein said computer code configured to cause said processor to:

if said second node receives a valid restore path request,

update path information in a node database, and

allocate resources requested for said virtual path.

80. The computer system of claim 72, wherein said computer code configured to cause said processor to:

if said second node receives an invalid restore path request,

respond with a negative acknowledgment.

81. A computer program product encoded in computer readable media, said program product comprising:

a first set of instructions executable on a computer system, configured to broadcast a plurality of resource request packets to a plurality of nodes in an optical network;

a second set of instructions executable on said computer system, configured to identify a plurality of nodes with resources wherein said nodes with resources are ones of said nodes having a resource necessary to support said virtual path;

a third set of instructions executable on said computer system, configured to determine an alternate physical path, said alternate physical path comprising ones of said nodes with resources;

a fourth set of instructions executable on said computer system, configured to configure said alternate physical path by establishing a communication connection between said ones of said nodes with resources; and

a fifth set of instructions executable on said computer system, configured to restore said virtual path by provisioning said virtual path over said alternate physical path.

82. The computer program product of claim 81, further comprising:

a sixth set of instruction executable on said computer system, configured to detect a failure in said virtual path in said optical system.

83. The computer program product of claim 81, wherein said first set of instruction comprises:

a first sub-set of instructions, executable on said computer system, configured to receive a failure message packet;

a second sub-set of instructions, executable on said computer system, configured to analyze said failure message packet; and

a third sub-set of instructions, executable on said computer system, configured to identify if said failure is a local failure.

84. The computer program product of claim 81, wherein:

said virtual path is provisioned on a physical path between a first and a second node of said optical network,

said physical path comprises a plurality of intermediate nodes,

each one of said nodes is coupled to at least on another of said nodes in a mesh topology.

85. The computer program product of claim 84, wherein said restoring of said virtual path is performed by said first node.

86. The computer program product of claim 85, further comprising:

a sixth set of instructions executable on said computer system, configured to:

if said failure is a local physical port failure between said first node and an adjacent node,

determine an available different physical port of said link between said first node and said adjacent nodes,

initiate a physical port switch request for said adjacent node,

provision said virtual path to said different physical port, and

update said provisioning information in a node database.

87. The computer program product of claim 86, further comprising:
a seventh set of instructions executable on said computer system, configured to:
if different physical port of said link between said first node and said adjacent nodes is unavailable,
(i) change a state of said virtual path to restoring,
(ii) identify a plurality of adjacent nodes with required bandwidth for said virtual path,
(iii) forward a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and
(iv) wait for a response for said path restoration request for a first predetermined time interval.

88. The computer program product of claim 87, further comprising:
an eighth set of instructions executable on said computer system, configured to:
if said response to said path restoration request is not received within said first predetermined time interval,
repeat steps (ii) – (iv) for a second predetermined time interval.

89. The computer program product of claim 86, further comprising:
a ninth set of instructions executable on said computer system, configured to:
if said response is not receive in within said second predetermined time interval,
generate network alarms.

90. The computer program product of claim 85, further comprising:
a sixth set of instructions executable on said computer system, configured to:

if said failure did not occur at a physical port of said link between said first node and one of adjacent nodes of said first node,

(i) changing a state of said virtual path to restoring,

(ii) identifying a plurality of adjacent nodes with required bandwidth for said virtual path,

(iii)forwarding a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and

(iv)waiting for a response for said path restoration request for a first predetermined time interval.

91. The computer program product of claim 90, further comprising:

a seventh set of instructions executable on said computer system, configured to:

if said response for said path restoration request is not receive within said first predetermined time interval,

repeat steps (ii) – (iv) for a second predetermined time interval.

92. The computer program product of claim 90, further comprising:

an eighth set of instructions executable on said computer system, configured to:

if said response for said path restoration request is not received with in said second predetermined time interval,

generate network alarms.

93. The computer program product of claim 84, wherein said restoring of said virtual path is performed by one of said intermediate nodes.

94. The computer program product of claim 93, further comprising:

a sixth set of instructions executable on said computer system, configured to:

if said failure is a local port failure between said intermediary node and an adjacent node comprising said virtual path,
determine an available different physical port of said link between said intermediary node and said adjacent nodes,
initiate a physical port switch request for said adjacent node,
provision said virtual path to said different physical port, and
updat said provisioning information in a node database.

95. The computer program product of claim 94, further comprising:
a seventh set of instructions executable on said computer system, configured to:
if different physical port of said link between said intermediary node and said adjacent nodes is unavailable,
a. change a state of said virtual path to down,
b. generate a restoration request,
c. forward said restoration request to a plurality of adjacent nodes comprising said virtual path, and
d. wait for a response to said restoration request for a predetermined interval of time.

96. The computer program product of claim 95, further comprising:
an eighth set of instructions executable on said computer system, configured to:
if said response to said restoration request is not received within said predetermined interval of time,
repeat steps (b) – (d) for a predefined threshold times.

97. The computer program product of claim 96, further comprising:
a ninth set of instructions executable on said computer system, configured to:

if said response to said restoration request is not received
within said predefined threshold times,
release resources of said virtual path.

98. The computer program product of claim 97, further comprising:
a tenth set of instructions executable on said computer system,
configured to:
if said response to said restoration request is received,
release resources of said virtual path.

99. The computer program product of claim 93, further comprising:
a sixth set of instructions executable on said computer system,
configured to:
if said intermediary node receives a message of a remote port
failure at a node comprising said virtual path,
change a state of said virtual path to down,
forward said message to a plurality of adjacent nodes
comprising said virtual path, and
initiate a timer for receiving a response to said
forwarded message.

100. The computer program product of claim 99, further comprising:
a seventh set of instructions executable on said computer
system, configured to:
if said timer expires before said response to said forwarded
message is received,
release resources of said virtual path.

101. The computer program product of claim 100, further comprising:
an eighth set of instructions executable on said computer
system, configured to:
if said response to said forwarded message is received,
release resources of said virtual path.

102. The computer program product of claim 93, further comprising:
a sixth set of instructions executable on said computer system,
configured to:
if said intermediary node receives a valid restore path request,
updating path information in a node database,
allocating resources requested for said virtual path, and
forwarding said restore path request to all eligible adjacent nodes.

103. The computer program product of claim 93, further comprising:
a sixth set of instructions executable on said computer system,
configured to:
if said intermediary node receives an invalid restore path request,
respond with a negative acknowledgment.

104. The computer program product of claim 84, wherein said restoring of said virtual path is performed by said second node.

105. The computer program product of claim 104, further comprising:
a sixth set of instructions executable on said computer system,
configured to:
if said failure is a local physical port failure between said second node and an adjacent node comprising said virtual path,
determine an available different physical port of said link between said second node and said adjacent nodes,
initiate a physical port switch request for said adjacent node,
provision said virtual path to said different physical port, and

update said provisioning information in a node database.

106. The computer program product of claim 105, further comprising:
a seventh set of instructions executable on said computer system, configured to:
if different physical port of said link between said second node and said adjacent nodes is unavailable,
a. change a state of said virtual path to down,
b. generate a restoration request,
c. forward said restoration request to a plurality of adjacent nodes comprising said virtual path, and
d. wait for a response to said restoration request for a predetermined interval of time.

107. The computer program product of claim 106, further comprising:
an eighth set of instructions executable on said computer system, configured to:
if said response to said restoration request is not received within said predetermined interval of time,
repeat steps (b) – (d) for a predefined threshold times.

108. The computer program product of claim 107, further comprising:
a ninth set of instructions executable on said computer system, configured to:
if said response to said restoration request is not received within said predefined threshold times,
release resources of said virtual path.

109. The computer program product of claim 107, further comprising:
a ninth set of instructions executable on said computer system, configured to:
if said response to said restoration request is received,
release resources of said virtual path.

110. The computer program product of claim 104, further comprising:
a sixth set of instructions executable on said computer system, configured to:
if said second node receives a message of a remote port failure at a node comprising said virtual path,
acknowledge said message,
change a state of said virtual path to down, and
release resources of said virtual path.

111. The computer program product of claim 104, further comprising:
a sixth set of instructions executable on said computer system, configured to:
if said second node receives a valid restore path request,
update path information in a node database, and
allocate resources requested for said virtual path.

112. The computer program product of claim 104, further comprising:
a sixth set of instructions executable on said computer system, configured to:
if said second node receives an invalid restore path request,
respond with a negative acknowledgment.

113. A computer system comprising:
means for broadcasting a plurality of resource request packets to a plurality of nodes in a optical network;
means for identifying a plurality of nodes with resources wherein said nodes with resources are ones of said nodes having a resource necessary to support a virtual path;
means for determining an alternate physical path, said alternate physical path comprising ones of said nodes with resources;

means for configuring said alternate physical path by establishing a communication connection between said ones of said nodes with resources; and

means for restoring said virtual path by provisioning said virtual path over said alternate physical path.

114. The computer system of claim 113, further comprising:

means for detecting a failure in said virtual path by receiving a failure message.

115. The computer system of claim 114, further comprising:

means for receiving a failure message packet;

means for acknowledging said failure message packet; and

means for determining said nodes with resources is done by analyzing a response to said resource request packets.

116. The computer system of claim 114, wherein:

said virtual path is provisioned on a physical path between a first and a second node of said optical network;

said physical path between said first and said second node comprises a plurality of intermediate nodes;

said optical network comprises said nodes; and

each one of said nodes is coupled to at least one another of said nodes by a plurality of optical links.

117. The computer system of claim 116, wherein each one of said nodes is coupled to at least one another of said nodes in a mesh topology.

118. The computer system of claim 117, wherein said means for restoring of said virtual path by is included in said first node.

119. The computer system of claim 118, further comprising:
means, if said failure is a local physical port failure between said first node and an adjacent node, for
determining an available different physical port of said link between said first node and said adjacent nodes,
initiating a physical port switch request for said adjacent node,
provisioning said virtual path to said different physical port, and
updating said provisioning information in a node database.

120. The computer system of claim 119, further comprising:
means, if different physical port of said link between said first node and said adjacent nodes is unavailable, for
(i) changing a state of said virtual path to restoring,
(ii) identifying a plurality of adjacent nodes with required bandwidth for said virtual path,
(iii)forwarding a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and
(iv)waiting for a response for said path restoration request for a first predetermined time interval.

121. The computer system of claim 120, further comprising:
if said response to said path restoration request is not received within said first predetermined time interval,
means for repeating steps (ii) – (iv) for a second predetermined time interval.

122. The computer system of claim 121, further comprising:
means, if said response is not receive in within said second predetermined time interval, for
generating network alarms.

123. The computer system of claim 119, further comprising:
means, if said failure did not occur at a physical port of said link between said first node and one of adjacent nodes of said first node, for
(i) changing a state of said virtual path to restoring,
(ii) identifying a plurality of adjacent nodes with required bandwidth for said virtual path,
(iii)forwarding a path restoration request to said plurality of adjacent nodes with required bandwidth for said virtual path, and
(iv)waiting for a response for said path restoration request for a first predetermined time interval.

124. The computer system of claim 123, further comprising:
if said response for said path restoration request is not receive within said first predetermined time interval,
means for repeating steps (ii) – (iv) for a second predetermined time interval.

125. The computer system of claim 124, further comprising:
means, if said response for said path restoration request is not received with in said second predetermined time interval, for
generating network alarms.

126. The computer system of claim 117, wherein said restoring of said virtual path is performed by one of said intermediate nodes.

127. The computer system of claim 126, further comprising:

means, if said failure is a local physical port failure between said intermediary node and an adjacent node comprising said virtual path, for

determining an available different physical port of said link between said intermediary node and said adjacent nodes,

initiating a physical port switch request for said adjacent node,

provisioning said virtual path to said different physical port, and

updating said provisioning information in a node database.

128. The computer system of claim 127, further comprising:

means, if different physical port of said link between said intermediary node and said adjacent nodes is unavailable, for

a. changing a state of said virtual path to down,

b. generating a restoration request,

c. forwarding said restoration request to a plurality of adjacent nodes comprising said virtual path, and

d. waiting for a response to said restoration request for a predetermined interval of time.

129. The computer system of claim 128, further comprising:

means, if said response to said restoration request is not received within said predetermined interval of time, for repeating steps (b) – (d) for a predefined threshold times.

130. The computer system of claim 129, further comprising:
means, if said response to said restoration request is not received within said predefined threshold times, for releasing resources of said virtual path.

131. The computer system of claim 129, further comprising:
means, if said response to said restoration request is received, for
releasing resources of said virtual path.

132. The computer system of claim 126, further comprising:
means, if said intermediary node receives a message of a remote port failure at a node comprising said virtual path, for
changing a state of said virtual path to down,
forwarding said message to a plurality of adjacent nodes comprising said virtual path, and
initiating a timer for receiving a response to said forwarded message.

133. The computer system of claim 132, further comprising:
means, if said timer expires before said response to said forwarded message is received, for
releasing resources of said virtual path.

134. The computer system of claim 132, further comprising:
means, if said response to said forwarded message is received,
releasing resources of said virtual path.

135. The computer system of claim 126, further comprising:
means, if said intermediary node receives a valid restore path request, for
updating path information in a node database,
allocating resources requested for said virtual path, and
forwarding said restore path request to all eligible adjacent nodes.

136. The method of claim 126, further comprising:
means, if said intermediary node receives an invalid restore path request, for
responding with a negative acknowledgment.

137. The computer system of claim 117, wherein means for restoring of said virtual path is included in said second node.

138. The computer system of claim 137, further comprising:
means, if said failure is a local physical port failure between said second node and an adjacent node comprising said virtual path, for
determining an available different physical port of said link between said second node and said adjacent nodes,
initiating a physical port switch request for said adjacent node,
provisioning said virtual path to said different physical port, and
updating said provisioning information in a node database.

139. The computer system of claim 138, further comprising:
means, if different physical port of said link between said second node and said adjacent nodes is unavailable, for

a. changing a state of said virtual path to down,
b. generating a restoration request,
c. forwarding said restoration request to a plurality of adjacent nodes comprising said virtual path, and
d. waiting for a response to said restoration request for a predetermined interval of time.

140. The computer system of claim 139, further comprising:
means, if said response to said restoration request is not received within said predetermined interval of time, for repeating steps (b) – (d) for a predefined threshold times.

141. The computer system of claim 140, further comprising:
means, if said response to said restoration request is not received within said predefined threshold times, for releasing resources of said virtual path.

142. The computer system of claim 140, further comprising:
means, if said response to said restoration request is received, for
releasing resources of said virtual path.

143. The computer system of claim 137, further comprising:
means, if said second node receives a message of a remote port failure at a node comprising said virtual path, for
acknowledging said message,
changing a state of said virtual path to down, and
releasing resources of said virtual path.

144. The computer system of claim 137, further comprising:
means, if said second node receives a valid restore path request,
updating path information in a node database, and
allocating resources requested for said virtual path.

145. The computer system of claim 137, further comprising:

means, if said second node receives an invalid restore path request, for

responding with a negative acknowledgment.

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